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**FACSIMILE TRANSMISSION**

August 9, 2005

TO : U.S. PATENT AND TRADEMARK OFFICE

ATTN: Examiner Anh T. N. Vo

FAX NO.: 571-273-8300

TELEPHONE:

FROM: Stephen T. Boughner

RE: **AMENDMENT WITH FEE TRANSMITTAL**

SERIAL NO.: 10/617,252

OUR DOCKET: 1293.1914

NO. OF PAGES (Including this Cover Sheet) 11

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By: Ernest M. Bumbalay

Date August 9, 2005

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Docket No.: 1293.1914

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Kwang-ryul KIM et al.

Serial No. 10/617,252

Group Art Unit: 2861

Confirmation No. 2436

Filed: July 11, 2003

Examiner: Vo, Anh T. N.

For: INK-JET PRINTHEAD

AMENDMENT

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

This is in response to the Office Action mailed March 9, 2005, and having a period for response set to expire on June 9, 2005. A petition for a one-month extension of time is concurrently filed herewith, thereby extending the response due date to July 9, 2005.

The following amendments and remarks are respectfully submitted. Reconsideration of the claims is respectfully requested.

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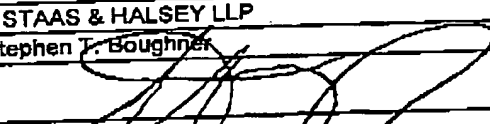
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S&amp;H Form: (02/05)

<b>REPLY/AMENDMENT FEE TRANSMITTAL</b>		Attorney Docket No.	1293.1914
		Application Number	10/617,252
		Filing Date	July 11, 2003
		First Named Inventor	Kwang-ryul KIM et al.
		Group Art Unit	2861
AMOUNT ENCLOSED	450.00	Examiner Name	Vo, Anh T. N.
<b>FEE CALCULATION (fees effective 12/08/04)</b>			
CLAIMS AS AMENDED	Claims Remaining After Amendment	Highest Number Previously Paid For	Number Extra
TOTAL CLAIMS	23	- 26 =	0
INDEPENDENT CLAIMS	3	- 3 =	0
Rate			Calculations
X \$ 50.00 =			\$ 0.00
X \$ 200.00 =			0.00
Since an Official Action set an original due date of June 9, 2005, petition is hereby made for an extension to cover the date this reply is filed for which the requisite fee is enclosed (1 month (\$120)); (2 months (\$450)); (3 months (\$1,020)); (4 months (\$1,590)); (5 months (\$2,160));			450.00
If Notice of Appeal is enclosed, add (\$500.00)			
If Statutory Disclaimer under Rule 20(d) is enclosed, add fee (\$130.00)			
Information Disclosure Statement (Rule 1.17(p)) (\$180.00)			\$ 450.00
Total of above Calculations =			
Reduction by 50% for filing by small entity (37 CFR 1.9, 1.27 & 1.28)			\$ 450.00
<b>TOTAL FEES DUE =</b>			
(1) If entry (1) is less than entry (2), entry (3) is "0".			
(2) If entry (2) is less than 20, change entry (2) to "20".			
(4) If entry (4) is less than entry (5), entry (5) is "0".			
(5) If entry (5) is less than 3, change entry (5) to "3".			
08/11/2005 CNGUYEN2 00000017 193935 10617252			
01 FC:1252 450.00 DA			
<b>METHOD OF PAYMENT</b>			
<input type="checkbox"/> Check enclosed as payment.			
<input checked="" type="checkbox"/> Charge "TOTAL FEES DUE" to the Deposit Account No. below.			
<input type="checkbox"/> No payment is enclosed.			
<b>GENERAL AUTHORIZATION</b>			
<input checked="" type="checkbox"/> If the above-noted "AMOUNT ENCLOSED" is not correct, the Commissioner is hereby authorized to credit any overpayment or charge any additional fees necessary to:			
Deposit Account No.		19-3935	
Deposit Account Name		STAAS & HALSEY LLP	
<input checked="" type="checkbox"/> The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit hereof pursuant to 35 USC § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(d)) to maintain pendency hereof or of any such related application.			
SUBMITTED BY: STAAS & HALSEY LLP			
Typed Name	Stephen T. Boughner	Reg. No.	45,317
Signature		Date	August 9, 2005

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Serial No. 10/617,252

**IN THE CLAIMS:**

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL claims 3-5, and 9, and AMEND claims 1, 10, 12-14 and 16-19, in accordance with the following:

1. (CURRENTLY AMENDED) An ink-jet printhead comprising:  
a substrate which includes an ink chamber where ink is stored, nozzles through which ink in the ink chamber is ejected, and a plurality of pads which apply an electrical signal to the substrate to generate droplets in the ink chamber;  
a flexible printed circuit (FPC) cable which includes a conductor corresponding to each of the pads, each conductor having bonding portions at front ends thereof; and  
connection members which electrically connect the pads to the bonding portions,  
wherein a connection member is bonded to a corresponding pad of the substrate and/or a corresponding bonding portion of the FPC by hot pressure welding.

2. (ORIGINAL) The printhead of claim 1, wherein the FPC includes a protection layer, protecting the conductor, having an opening through which the bonding portions are exposed is provided in the protection layer.

3-5. (CANCELED)

6. (ORIGINAL) The printhead of claim 2, wherein one end of each pad of the substrate and one end of each connection member are bonded to each other by hot pressure welding or soldering.

7. (ORIGINAL) The printhead of claim 2, wherein ends of the bonding portions of the FPC and the other end of each connection member are bonded to each other by hot pressure welding or soldering.

8. (ORIGINAL) The printhead of claim 2, wherein each connection member is

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bonded to one end of each pad of the substrate and ends of the bonding portions of the FPC by hot pressure welding.

9. (CANCELED)

10. (CURRENTLY AMENDED) The ink-jet printhead according to claim 149, wherein the connection member is bonded to the bonding pad and the bonding portion by hot pressure welding.

11. (ORIGINAL) The ink-jet printhead according to claim 10, wherein the hot pressure welding employs a bonding tool and a thermal pressing method.

12. (CURRENTLY AMENDED) The ink-jet printhead according to claim 149, wherein the FPC comprises a cable surrounding the substrate.

13. (CURRENTLY AMENDED) The ink-jet printhead according to claim 149, further comprising nozzles on the substrate.

14. (CURRENTLY AMENDED) — An ink-jet printhead, comprising:  
a substrate including a first conductor having a bonding pad;  
a Flexible Printed Circuit (FPC) having a second conductor having a bonding portion  
corresponding to the bonding pad;  
a connection member, wherein the connection member electrically connects the bonding  
pad of the first conductor to the bonding portion of the second conductor and the connection  
member is bonded to the bonding pad by hot pressure welding; and  
~~The ink-jet printhead according to claim 9, further comprising upper and lower protection~~  
layers protecting the second conductor.

15. (ORIGINAL) The ink-jet printhead according to claim 14, further comprising an opening in the upper protection layer through which the bonding portion is exposed.

16. (CURRENTLY AMENDED) The ink-jet printhead according to claim 149, wherein the connection member is substantially ribbon shaped.

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17. (CURRENTLY AMENDED) The ink-jet printhead according to claim 149, wherein the connection member is perforated.
18. (CURRENTLY AMENDED) The ink-jet printhead according to claim 149, further comprising a plurality of connection members.
19. (CURRENTLY AMENDED) The ink-jet printhead according to claim 128, further comprising an insulating connection ribbon to fix the plurality of connection members in a parallel arrangement.
20. (WITHDRAWN) A method of fusing a connection member to a bonding pad of a substrate, comprising:  
opening an opening in a protective layer above the bonding pad of the substrate; and  
hot pressure welding the connection member to the bonding pad of the substrate.
21. (WITHDRAWN) The method according to claim 20, further comprising hot pressure welding the connection member to a bonding portion of a Flexible Printed Circuit (FPC).
22. (WITHDRAWN) The method according to claim 21, further comprising soldering the connection member to the bonding pad of the substrate and the bonding portion of the FPC.
23. (WITHDRAWN) The method according to claim 21, wherein the operation of opening comprises processing by an excimer laser.
24. (WITHDRAWN) The method according to claim 23, wherein the processing further comprises varying a pulse of the laser to prevent melting.
25. (WITHDRAWN) The method according to claim 23, wherein the processing further comprises using an interruptive method, the interruptive method comprising:  
changing a pulse cycle of the laser; and  
adjusting a time interval of the pulse of the laser.
26. (WITHDRAWN) The method according to claim 20, wherein the hot pressure

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welding comprises:

- pressing a bonding tool on a welding object; and
- heating an electrical heating layer in a gap at an end of the bonding tool to approximately 300 – 500 degrees celcius.

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**REMARKS****INTRODUCTION**

In accordance with the foregoing, claims 3-5, and 9 have been canceled, without prejudice or disclaimer, and claims 1, 10, 12-14 and 16-19 have been amended. No new matter has been presented.

Claims 1, 2, 6-8, and 10-26 are pending, with claims 1, 2, 6-8, and 10-19 being under consideration.

**REJECTIONS UNDER 35 USC 102**

Claim 1 stands rejected under 35 U.S.C. 102(b) as being anticipated by Komuro et al., U.S. Patent No. 4,873,622, claim 1 stands rejected under 35 U.S.C. 102(e) as being anticipated by Patil et al., U.S. Patent No. 6,425,655, and claim 1 stands rejected under 35 U.S.C. 102(e) as being anticipated by Akhavain et al., U.S. Patent No. 6,543,880.

In view of the incorporation of claim features from previously dependent claims, rejected under 35 USC § 103, into independent claim 1, it is respectfully submitted that these rejections are now moot.

**REJECTIONS UNDER 35 USC 103**

Claims 2-19 stand rejected under 35 U.S.C. 103(a) as being obvious over Patil et al., in view of Asano, U.S. Patent No. 6,396,665. This rejection is respectfully traversed.

By way of review and as an example, independent claim 1 sets forth:

"[a]n ink-jet printhead comprising:

a substrate which includes an ink chamber where ink is stored, nozzles through which ink in the ink chamber is ejected, and a plurality of pads which apply an electrical signal to the substrate to generate droplets in the ink chamber;

a flexible printed circuit (FPC) cable which includes a conductor corresponding to each of the pads, each conductor having bonding portions at front ends thereof; and

connection members which electrically connect the pads to the bonding portions.

wherein a connection member is bonded to a corresponding pad of the substrate and/or a corresponding bonding portion of the FPC by hot pressure welding."

The Office Action has indicated that Patil et al. fails to disclose "the FPC includes a



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protection layer, protecting the conductor, having an opening through which the bonding portions are exposed is provided in the protection layer and one end of each pad, one end of each connection member and one end of the bonding portions are bonded to each other by hot pressure welding or soldering."

The Office Action further indicates that it would have been obvious to modify Patil et al. to include the claimed bonding by hot pressure welding "for the purpose of reinforcing the connection strength through the connecting end portions and the FBC."

However, it is respectfully submitted that there is no evidence in the record that there would have been any motivation for the suggested modification of Patil et al. In particular, it is respectfully submitted that the Office Action has merely set forth features Asano and set forth that the addition of the same into Patil et al. would have been obvious so Patil et al. would include such features, without support in the record.

It is respectfully submitted that none of the cited references provide any support or evidence that there would be a need or desire to modify Patil et al. as suggested. In addition, nothing in the record provides any evidence or suggestion that Patil et al. needs or desires the suggested "reinforcing the connection strength through the connecting end portions and the FBC."

Rather, the cited motivation is unsupported by the record and derives solely from the opinion of the Examiner.

MPEP § 2142 states that "it is the duty of the Examiner to explain why the combination of the teachings is proper." The Examiner is required to present actual evidence and make particular findings related to the motivation to combine the teachings of the references. In re Kotzab, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); In re Dembiczak, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence." Dembiczak, 50 USPQ2d at 1617.

The factual inquiry must be based on objective evidence of record, and cannot be based on subjective belief and unknown authority. Id. at 1433-34. The Examiner must explain the reasons that one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. In re Rouffet, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

Further, despite the Office Action's attempt to evidence the obviousness modification rationale by relying on an unsupported motivation, it is well settled that "the Board [and

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Examiner] cannot simply reach conclusions based on [their] own understanding of experience - or on [their] assessment of what would be basic knowledge or common sense. Rather the Board must point to some concrete evidence in the record in support of these findings." In re Zurko, 258 F. 3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). See also In re Lee, 277 F. 3d 1338, 1344-45, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002), in which the court required evidence for the determination of unpatentability by clarifying that the principles of "common knowledge" and "common sense" may only be applied to the analysis of evidence, rather than be a substitute for evidence.

Thus, accordingly, a prima facie obviousness rejection requires evidenced motivation from something in the record that would lead one skilled in the art to combine the relevant teachings. The mere fact that the prior art may be modified in a particular manner does not make the modification obvious unless the prior art suggested the desirability of that modification.

Therefore, it is respectfully submitted that there would not have been motivation to modify Patil et al. as suggested.

Rather, it is respectfully submitted that the present invention has a particular orientation of the connector, and particularly explains how the connector can connect to each of the pad or bonding portions. In particular, the notch implemented by the present invention created by the claimed opening permits the use of the claimed hot pressure welding.

Conversely, none of the cited references, including Patil et al., have an orientation susceptible for such the claimed "wherein a connection member is bonded to a corresponding pad of the substrate and/or a corresponding bonding portion of the FPC by hot pressure welding"

Similarly, the Office Action has failed to support the conclusion that Patil et al. is even modifiable for the Office Action's proffered modification.

Thus, it is respectfully submitted that it would not have been obvious to modify Patil et al. to disclose the presently claimed invention.

Therefore, for at least the above, it is respectfully requested that the outstanding rejections be withdrawn and the presently claimed invention be allowed.

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## CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS &amp; HALSEY LLP

Date: August 9, 2005By: Stephen T. Boughner  
Registration No. 45,317

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